

Performance Measures

The 32 Starting Points are exactly that—starting points to be developed and refined into alternatives which “perform better” overall, with respect to Bay-Delta Program objectives. That “performance” needs to be defined in a systematic way to help identify ways to improve alternatives, to synthesize promising new alternatives, and to finally determine an acceptable short list of alternatives. That “performance” is defined using “Performance Measures”—measurable indices for how well an alternative satisfies a Bay-Delta Program objective. The following pages describe the current set of nine performance measurers (PMs). These PMs have been developed in an orderly process, starting from the set of Bay-Delta problem statements and associated program objectives, which were then developed into a set of measurable indices.

At any given stage in the project, the PMs must “match” the alternatives. That is, the actions that comprise an alternative must be specific enough to be evaluated by the PMs, or to put it another way, the PMs must be general enough to be able to evaluate each action.

As the program progresses, the PMs and actions will “co-evolve.” That is, as the alternatives are refined and the actions become better specified, the PMs can be made more specific. In turn, the more specific PMs provide more specific guidance on how to refine the alternatives. At this stage, the actions comprising the alternatives are quite general, so the PMs must be applicable to a very general level. In fact, those PMs assess each action in terms of its potential to contribute to achieving a Bay-Delta objective, or more specifically, its potential to contribute to achieving some maximum achievable benefit identified as a part of a PM.

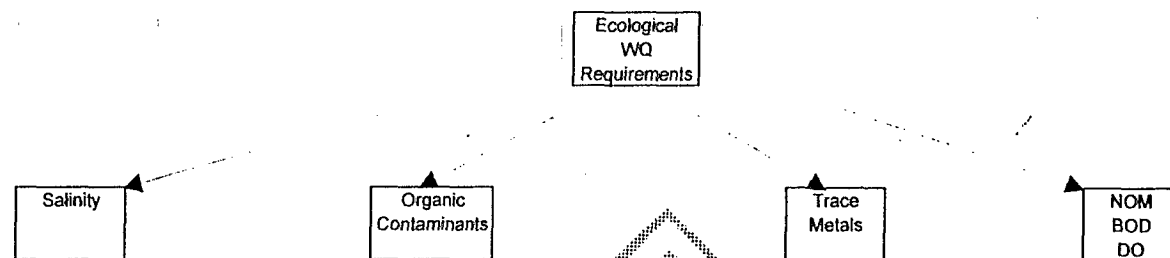
In the current process, each PM is associated with several specific benefits. The following nine figures present the current of nine PMs. Each figure presents the benefit categories and explanatory narrative for a PM.

While in the long term, PMs will measure performance of alternatives, at this stage they will measure performance of the actions, specifically, the benefits associated with a PM forms the basis for “scoring” an action’s performance on that PM. First, 100 percentage points are allocated among the associated benefits, then each action is “scored” in terms of its potential to achieve the maximum achievable level of each associated benefit in percentage terms. For example, if an action has the potential to achieve one half of the maximum achievable level of the Shaded and Shallow Area benefit associated with Aquatic Habitat, and that benefit has been allocated 12 percent of the Aquatic Habitat PM, then that action receives a score of 0.6 (50 percent of 12 percent) for its performance with respect to Shaded and Shallow Area. Suppose it also gets scores from other benefits associated with Aquatic Habitat, say .04 and .02. That action’s score for Aquatic Habitat is .12 (.06 + .04 + .02).

An alternative is scored with nine numbers, one for each PM. Its score on each PM is simply the sum of the scores its actions receive on that PM. Alternatives can then be compared by comparing their nine numerical PM scores. Graphical devices, such as nine-bar bar graphs, can aid in that comparison. The PM set is still under development, so these could be more than nine PMs at the time of the actual scoring.

Objective: Provide improved Delta water quality for environmental needs.

Performance Measure: Ecological Water Quality Requirements



Bay-Delta Ecological Water Quality Requirements

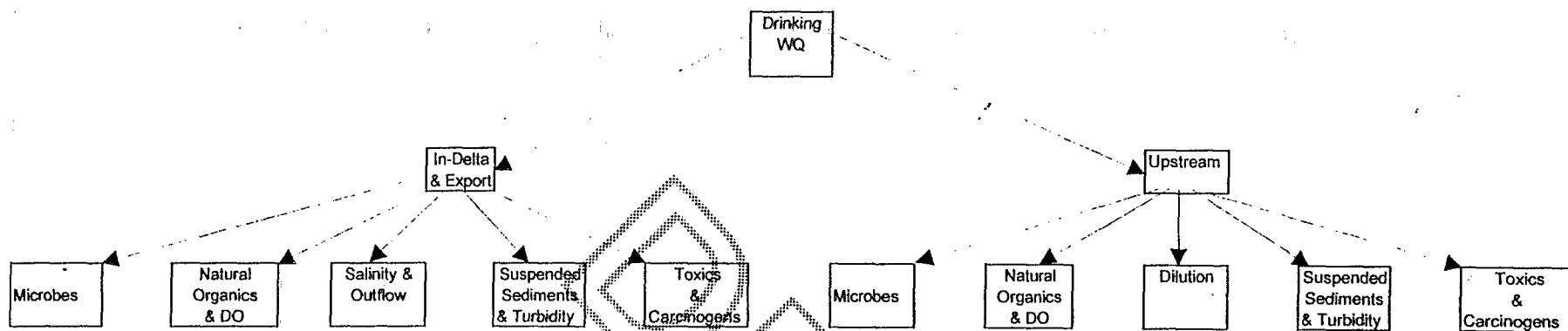
Capability of Actions to provide water of adequate quality to meet the ecological requirements of the plant, animal, fish and bird species dependent on the Bay-Delta system and correct any existing water quality problems impairing biological productivity. Key components of the performance measure include ability to:

- Reduce the incidence of excessive salinity levels (from ocean and land-derived salts) that can lower biological productivity, harm, or otherwise impair uses of Delta habitats by plant, animal, fish and bird species
- Reduce the incidence and mass loadings of excessive or persistent concentrations of organic contaminants (such as pesticides, herbicides, and industrial chemicals) that are believed to cause acute or chronic toxicity problems, or bioaccumulate to adverse levels in the tissues of plant, animal, fish and bird species.
- Reduce the incidence and mass loadings of excessive concentrations of heavy metals or other trace materials (such as copper, lead and selenium) that are believed to cause acute or chronic toxicity problems, or bioaccumulate to adverse levels in the tissues of plant, animal, fish and bird species.
- Reduce mass loadings of organic materials in areas subject to excessive concentrations of substances exerting high levels of biochemical oxygen demand (BOD) to the point of reducing dissolved oxygen levels in the water column below 5mg/L.

Degradation of Delta water quality occurs from sources 1) within the Delta, and 2) upstream of the Delta.

Objective: Provide good water quality in Delta and in water exported for Drinking Water needs.

Performance Measure: Delta Drinking Water Quality



DELTA DRINKING WATER QUALITY

The purpose of this performance measure is to evaluate the objective of providing adequate Delta drinking water quality for human health and aesthetic preferences (e.g., taste, odor, and appearance). Upstream land uses and water withdrawals can influence Delta water quality, therefore the measure is geographically divided between the Delta and upstream. Five benefit categories influence the outcome of the performance score for the Delta: Natural Organics/Microbes (e.g., viruses and coliform bacteria), Eutrophication & Dissolved Oxygen (e.g., planktonic blue-green algae), Salinity/Outflow, Suspended Sediment and Turbidity, and Toxics (including trace metals and most pesticides). The same categories are used for Upstream except Dilution is substituted for Salinity/Outflow. The categories incorporate water quality issues raised in the Water Quality Control Plan for the San Francisco/Sacramento-San Joaquin Delta Estuary (SWRCB/95-1WR/ May 1995).

In-Delta and Export Agricultural and Industrial Water Quality

Capability of Actions to provide adequate water quality of Delta water used locally and exported to meet agricultural and industrial water quality needs. The key component of the performance measure is the ability to:

- Reduce total dissolved solids and the incidence of excessive salinity levels (ocean and land-derived) that can impair agricultural and industrial beneficial uses

Degradation of Delta water quality by salts occurs from sources 1) at the upstream end of the estuary (ocean-derived salts), 2) within the Delta (primarily agricultural drainage from Delta islands), and 3) upstream of the Delta (primarily agricultural drainage from the San Joaquin Valley).

Performance Measure: Agricultural/Industrial WQ Requirements

Objective: Provide good Delta water quality for agricultural/industrial uses.

